

Appl. No. 10/718,231

Amdt. Dated December 16, 2004

Reply to Office Action of September 23, 2004

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in this application.

1. (Currently Amended) An automatic tracking apparatus for a reflector comprising:
a surveying machine body;
an illumination portion disposed in said surveying machine body for illuminating a measurement light toward a reflector;
a light receiving portion which is disposed in said surveying machine body and which has an image sensor for receiving a reflection light image of the measurement light illuminated toward said reflector;
arithmetic means for calculating a position of the reflection light image from said reflector in an area of said image sensor; and
a rotation mechanism for rotating said surveying machine body so as to position said reflector on a light receiving optical axis of said light receiving portion based on the position obtained by said arithmetic means,
wherein the area of the image sensor is provided with a first light receiving area, which is set to be larger than the reflection light image, having a smaller area than the area of the

~~image sensor area and has said light receiving optical axis as a center, and a second light receiving area surrounding the first light receiving area is provided in the area of said image sensor.~~

2. (Currently Amended) The automatic tracking apparatus for ~~the~~ a reflector according to Claim 1, wherein ~~the~~ areas of said first light receiving area and the second light receiving area ~~is~~ are changed in accordance with a distance from said reflector to the surveying machine body based on measurement distance data.

3. (Cancelled).

4. (Currently Amended) The automatic tracking apparatus for ~~the~~ a reflector according to ~~Claim 3~~ Claim 1, wherein an area of the second light receiving area is set by judging a distance from a size of when a reflection light image of said reflector is not existed in said first light receiving area, the reflection light image of said reflector is detected in said second light receiving area, and when the reflection light image of said reflector is not existed in said second light receiving area, the reflection light image is detected in an area of the image sensor.

5. (Currently Amended) The automatic tracking apparatus for ~~the~~ a reflector according to ~~Claim 4~~ Claim 1, wherein a range of said second light receiving area is set within a range of a rotation angle in a horizontal direction and a rotation angle in a vertical direction in which said surveying machine body is rotated in horizontal and vertical directions by said rotation mechanism within a scanning time for one field of said image sensor.

6. (Currently Amended) The automatic tracking apparatus for ~~the~~ a reflector according to ~~Claim 3~~ Claim 1, wherein said arithmetic means comprises a storing portion for

storing a position of said reflection light image and a position of a light image other than said reflection light image, and when the light image other than said reflection light image ~~is existed~~ exists in said second light receiving area, said arithmetic means distinguishes between the position of said reflection light image and the position of the light image other than said reflection light image.

7. (Currently Amended) The automatic tracking apparatus for ~~the~~ a reflector according to Claim 6, wherein said storing portion stores a size and a shape of said reflection light image, and said arithmetic means specifies ~~a~~ the reflector based on the size and the shape of said reflection light image as well as said position.